Practice Problems: Heat & Specific Heat Capacity [Introductory]

See the complete solutions to these problems at http://www.youtube.com/watch?v=1MadkgI9Ynk.

Perform the following calculations, being sure to give the answer with the correct number of significant digits.

Substance	Specific Heat (J/g·°C)
Aluminum	0.903
Magnesium	1.02
Ethanol	2.42
1 cal ≈ 4.184 J	

1. A car with magnesium wheels is parked in the sun. If the temperature rises from 22°C to 35°C, how many MJ of heat does each 6.8 kg wheel absorb?

2. Calculate the temperature change that occurs when 364 cal of heat are added to 1.39 kg of ethanol.

3. An unknown metal is thought to be aluminum. When 6.11 cal of heat are added to 22.5 g of the metal, its temperature rises by 4.8°C. If aluminum's specific heat is 0.903 J/g·°C, is the metal aluminum?